

## HYBRID THIN FILM/THICK FILM SOLID OXIDE FUEL CELL AND METHOD OF MANUFACTURING THE SAME

### ABSTRACT OF THE DISCLOSURE

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A SOFC providing higher power densities than PEM-based cells; the possibility of direct oxidation and/or internal reforming of fuel; and reduced SOFC operating temperatures. The SOFC comprises a thin film electrolyte layer. A thick film anode layer is disposed on one surface of the electrolyte layer; and a  
10 thick film cathode layer is disposed on the opposite surface of the electrolyte layer. A method of making the SOFC comprises the steps of: creating a well in one side of a dielectric or semiconductor substrate; depositing a thin film solid oxide electrolyte layer on the surface of the well; applying a thick film electrode layer in the electrolyte coated well; creating a counter well in the opposite side of  
15 the substrate, the counter well abutting the electrolyte layer; and applying a thick film counter electrode layer in the counter well.